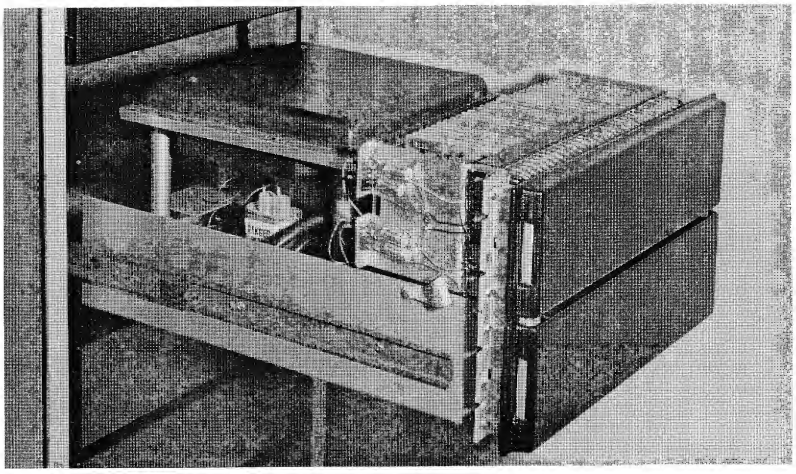

digital

RANDOM ACCESS DISC FILE TYPE DF32 FOR PDP-8 & PDP-8/S

The Type DF32 Disc File is a fast, low-cost, random-access, bulk-storage device and control for the PDP-8 and PDP-8/S computers. Operating through the 3-cycle break channel of these computers, the DF32 provides 32,768 13-bit words (12 bits plus parity) of storage, and is economically expandable to 131,072 using Expander Disc Type DS32.

Transfer rate of the DF32 is 66 μsec per word; average access time is 16.67 msec for 60-cycle power (20 msec with 50-cycle power).

Two basic assemblies comprise the DF32: the storage unit with read/write electronics, and computer interface logic. The storage unit contains a nickel-cobalt plated disc driven by a hysteresis synchronous motor. Data is recorded on a single disc surface by 16 read/write heads which are in permanent or fixed position. A photo-reflective marker is used on the disc's outer perimeter to denote beginning and end of timing and address tracks.

Disc motor and shaft, read/write data heads, timing and address heads, and photocell assembly are mounted to a base plate. The base plate is mounted on a rack assembly which permits sliding the unit in and out of a standard Digital Equipment Corporation cabinet.

The disc is designed for rack mounting in a 19 inch relay rack. Overall dimensions of the DF32 are 10-1/2 inches high, 19 inches wide, and 20-3/4 inches deep.

SPECIFICATIONS

Storage capacity	DF32 32,768, 13-bit words. DS32 32,768, 13-bit words (up to 3 DS32 units may be added to the DF32, giving a maximum capacity of 131,072 words)	
	60 cycle power	50 cycle power
Data transfer rate	66 μsec per word	80 μsec per word
Average access time	16.67 msec	20.0 msec
Write lock switches	Inhibit writing on lower and/or upper 16K of any 32K disc surface, and may be used to inhibit one or more 32K discs in an expanded configuration.	
Addressing scheme	Random or absolute addressing from 0 to 32K words with variable block sizes from 1 word to 4096 words.	
Data assembly	Read/write on disc is serial, with external transfer parallel by word.	
Data tracks	16	
Words per track	2048	
Recording method	NRZI	
Density	1100 BPI	
Timing tracks	2 plus 2 spare	
Operating environment	Temperature: 60 to 85°F Relative Humidity: 20 to 80%	
Heat dissipation	500 watts	
Power requirements	118v, 50 or 60 cycle, single phase, ac Logic Power: 3 amps at +10v 6.2 amps at −15v	
Mechanical dimensions	DF32 (32K disc and control) 10-1/2 inches high 19 inches wide 20-3/4 inches deep DS32 (32K expander disc surface) 10-1/2 inches high 19 inches wide 20-3/4 inches deep	
Mechanical mounting	Chassis track slides provided for mounting in 19 inch relay rack	
Price	DF32, 32K disc and control - $6000.00* DS32, 32K expander disc surface - $3000.00	

*PDP-8/S requires data break option in addition.

Data Transfer Path — 3-Cycle Break — Address Locations: 7750 Word Count, 7751 Memory Address

Program Break — Data Transfer - Completion flag and/or non-existent disc

Write lock Switches — Inhibit write only on lower or upper 16K or both on 1 or more discs

Select Switches — Rotary Switches to select disc address

Mnemonic	Octal	Operation
DCMA	6601	Clear the disc Memory Address register, parity error, and completion flags. This instruction clears the disc memory request flag and interrupt flags.
DMAR	6603	Load the Disc Memory Address with information (initial address) in the accumulator. Then clear the AC. Begin to Read information from the disc into the specified core location. Clear parity error and completion flags. Clear interrupt flags AC_0-11 → DMA_0-11
DMAW	6605	Load the Disc Memory Address register with information (initial address) in the accumulator (AC). Begin to Write information onto the disc from the specified core location. Data break must be allowed to occur within 66 μsec after issuing this instruction. Clear parity error and completion flags. Clear interrupt flags. AC_0-11 → DMA_0-11
DCEA	6611	Clear the disc Extended Address and memory Address extension register.
DSAC	6612	Skip next instruction if the Address Confirmed flag is a 1. Flag is set for 16 μsec (AC is cleared).
DEAL	6615	Clear the Disc Extended Address and memory address extension register. Then Load the disc extended address and memory address extension registers with the track address data held in the accumulator. AC_6-8 → EA_3-1 32, 64, 96, 128K: AC_1-5 → EMA_5-1 AC_0, 9-11 - Open
DEAC	6616	Clear the accumulator. Then load the contents of the Disc Extended address register into the ACcumulator to allow program evaluation. Skip next instruction if address confirmed flag is a 1. 32, 64, 96, 128K: EMA_5-1 → AC_1-5 Computer memory EA_3-1 → AC_6-8 Photo-cell sync mark → AC_0 (available 200 μsec) Data request late flag → AC_9 Non-existent or write lock switch "on" → AC_{10}* Parity errors → AC_{11}
DFSE	6621	Skip next instruction if the Parity Error, data request late, or write lock switch flag is a 0 (no error).
DFSC	6622	Skip next instruction if the Completion flag is a 1 (data transfer is complete).
DMAC	6626	Clear the accumulator. Then load the contents of the Disc Memory address register into the ACcumulator to allow program evaluation. DMA_0-11 → AC_0-11 During Read the final address will be the last address transferred +2. During Write the final address will be the last address transferred +1.

* Write lock switch status is true only when disc module contains write command.